

# Claims

- [c1] 1. An automatic contrast limiting circuit with a spatial domain infinite impulse response filter, for evaluating a contrast value, comprising:
- a spatial domain infinite impulse response filter, for receiving an input signal for generating a spatial domain infinite impulse response filtering value;
  - a peak value detector, coupled to the spatial domain infinite impulse response filter, for generating a peak value during a predetermined recording interval corresponding to the spatial domain infinite impulse response filtering value; and
  - a contrast evaluator, coupled to the peak value detector, for evaluating the contrast value according to the peak value and a predetermined threshold.
- [c2] 2. The automatic contrast limiting circuit with the spatial domain infinite impulse response filter of claim 1, wherein the spatial domain infinite impulse response filter comprises:
- a first multiplier, for multiplying the input signal with a first factor value for generating a first output value;
  - an adder, coupled to the first multiplier for generating a

sum of the first output value and a second output value to be the spatial domain infinite impulse response filtering value; and

a second multiplier, adapted to multiply the spatial domain infinite impulse response filtering value with a second factor value for generating the second output value, wherein a sum of the first factor value and the second factor value is 1.

[c3] 3.The automatic contrast limiting circuit with a spatial domain infinite impulse response filter of claim 1, wherein when the contrast evaluator determines the peak value higher than the predetermined threshold, the contrast value is 1; otherwise, the contrast value is a value of the predetermined threshold divided by the peak value.

[c4] 4.The automatic contrast limiting circuit with a spatial domain infinite impulse response filter of claim 1 further comprising:

a front-end spatial domain infinite impulse response filter, for receiving a front-end input signal for generating a front-end spatial domain infinite impulse response filtering value; and

a front-end peak value detector, coupled to the front-end spatial domain infinite impulse response filter for generating a front-end peak value during a front-end

predetermined recording interval to be the input signal of the spatial domain infinite impulse response filter according to the spatial domain infinite impulse response filtering value.

[c5] 5.The automatic contrast limiting circuit with a spatial domain infinite impulse response filter of claim 4, wherein the front-end spatial domain infinite impulse response filter comprises:  
a first multiplier, for multiplying the front-end input signal with a first factor value for generating a first output value;  
an adder, coupled to the first multiplier for generating a sum of the first output value and a second output value to be the front-end spatial domain infinite impulse response filtering value; and  
a second multiplier, for multiplying the front-end spatial domain infinite impulse response filtering value with a second factor value for generating the second output value, wherein a sum of the first factor value and the second factor value is 1.

[c6] 6.An automatic contrast controlling method of a spatial domain infinite impulse response filter, adapted to evaluate a contrast value, comprising:  
receiving an input signal for generating a spatial domain infinite impulse response filtering value;

generating a peak value during a recoding interval according to the spatial domain infinite impulse response filtering value; and  
evaluating the contrast value according to the peak value and a predetermined threshold.

- [c7] 7. The automatic contrast controlling method of a spatial domain infinite impulse response filter of claim 6, wherein when the peak value is higher than the predetermined threshold, the contrast value is 1; otherwise, the contrast value is a value of the predetermined threshold divided by the peak value.